## ABSTRACT

Antennas for use in magnetic resonance imaging ("MRI") comprise a coaxial cable unit having an inner conductor tuned to a frequency, typically the Larmor frequency of the species of interest, and an outer conductor substantially surrounding the inner conductor and also tuned to the frequency. The inner and outer conductors are inductively coupled. The antennas may be used as receiving and transmitting antennas. In a receiving antenna, the inner conductor provides an output of the antenna. In a transmitting antenna, an input is provided to the inner conductor. Antenna arrays of one or more coaxial cable units, wherein the inner conductors of each unit are electrically connected and the outer conductors are electrically connected, and the units are inductively coupled, may be provided. Additional coaxial cable units may also be provided, inductively coupled to adjacent coaxial cable units. Each coaxial cable unit may comprise multiple inner conductors. A second outer conductor may be provided substantially surrounding the first outer conductor, tuned to the frequency and including holes through the second outer conductor. A hand, wrist and toe antenna array and a head antenna array are disclosed. Magnetic resonance imaging systems incorporating the antennas of the present invention, are also disclosed.